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ABSTRACT

Interaction between instructors and learners is a critical element in the learning process during an online course (Moore 1993; Offir 2000). The desire to engage the students in meaningful and challenging interaction would appear to require an intensive time commitment by the faculty. This paper presents methods that not only engage the learner but also relieve the stress that time constraints place on the online instructor. In particular, examples from the Internet-based Master in Public Health Program of the Johns Hopkins School of Hygiene and Public Health (JHSPH) are used to illustrate these processes and techniques. Over the past 4 years of online course development, JHSPH has found that faculty can maintain quality interaction with learners without significantly increasing the normal on-site instructor-learner interaction time. Dialogue is richer (particularly in large survey classes) and, by strategically integrating media into their on-site classes also, they can reduce the amount of time spent in the routine work of delivering on-site classes. Recurrent questions can be tracked electronically and either used to improve content or posted in frequently asked question (FAQ) areas. Many on-site administrative issues can be handled electronically rather than in office hours. Office hours can be spent on more substantive issues, such as career planning. Although developing an online course still requires a great deal of time by faculty and distance education staff, creative, strategic planning can result in online courses that achieve successful and quality faculty/student interaction without undue burden on faculty time. (Contains 18 references.) (AEF)

Faculty/Student Interaction at a Distance: Seeking Balance

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Abstract:

Interaction between instructors and learners is a critical element in the learning process during an online course (Moore 1993; Offir 2000). The desire to engage the students in meaningful and challenging interaction would appear to require an intensive time commitment by the faculty. This paper will present methods that not only engage the learner but also relieve the stress that time constraints place on the online instructor. In particular, examples from the Internet-based Master in Public Health Program of The Johns Hopkins School of Hygiene and Public Health will be used to illustrate these processes and techniques.

Introduction

Interaction between instructors and learners is a critical element in the learning process during an online course (Moore 1993; Offir 2000). The desire to engage the students in meaningful and challenging interaction would appear to require an intensive time commitment by the faculty. This paper will present methods that not only engage the learner but also relieve the stress that time constraints place on the online instructor. In particular, examples from the Internet-based Master in Public Health Program (iMPH) of The Johns Hopkins School of Hygiene and Public Health (JHSPH) will be used to illustrate these processes and techniques.

Managing students is a demanding and often stressful aspect of conducting a course, whether on campus or online. Faculty can address this issue with the implementation of effective pedagogical tools and the incorporation of careful course design features (Gates 2000). For example, by exchanging ideas, conversing, and challenging the students in well-designed interactive activities, the teacher's attention is less dispersed and the level of unpredictability is reduced (Ibid.). Ideally, incorporating an active learner model, such as a constructivist approach, focuses the students' attention on problem solving and interaction with their classmates, enabling instructors to step aside and use their time to challenge and to guide the learners. The key is to determine the correct balance of faculty / student interaction that is both manageable for the instructor and advantageous for the learner.

Challenges

Faculty apprehension regarding the amount of time that is required to develop and deliver an online course is well-documented (Brigham 1992; Cornell and Martin 1997; Ward and Newlands 1998; Williams and Peters 1997). The very nature of online courses suggests to the learner that the instructor is always available to answer questions or provide comments. Communication tools such as electronic mail, bulletin board systems, and chat software link the students together in a community that exists beyond the traditional bounds of time zones and geographical boundaries. Perceived by the learner as operating within the "rolling present," the instructor can feel pressured to spend large amounts of time interacting with the students (Kimball 1998).

Other time constraints exist for faculty in this process. For example, preparation of materials for course delivery on the Web is relatively time consuming (Ward and Newlands). Working with new online technologies often includes a certain learning curve. In addition, there is the possibility of unrealistic expectations as well as the limitations of the technology to simulate real-time interaction for certain activities and courses (O'Leary 1999; Johnson, 2000).

Solutions

By taking advantage of online technologies, faculty have the tools to design powerful learning environments that ideally incorporate experiences from the students' expertise, and challenge them to solve problems through critical thinking activities (Jonassen 1999; Dutt-Doner and Powers 2000). The key is to ensure that the three basic types of interaction are present in the distance education course: learner-content interaction, learner-instructor interaction, and learner-learner interaction (Moore 1993). Also, a framework for the management of successful online communication is required (Berge 1997; Oliver 1999; Rossman 1999; Sherry, Billig and Tavalin 2000). In particular, the instructor must be able to manage the online environment by maintaining four roles: pedagogical, social, managerial, and technical (Berge, 1995). The result is an online course that engages and challenges the learners but avoids over-taxing the time and energy of the instructor. The following examples from the iMPH degree program at JHSPH illustrate how this balance has been achieved.

JHSPH iMPH Program

The Johns Hopkins School of Public Health developed and delivered its first full Internet-based graduate courses in 1997, after establishing a small distance education division. Experience and student feedback soon demonstrated that our most successful courses were those that included recurrent interaction between faculty and students. Faculty time, however, was already stretched due to research, travel, and on-site teaching commitments. Requesting more teaching commitment, in addition to the time required to develop the online components, was not received well. The division, therefore, began to explore methods of incorporating technology that would create an interaction balance acceptable to both faculty and students.

The following examples of JHSPH iMPH courses illustrate the various strategies used by our division to incorporate Moore's model of the three basic types of interaction while keeping faculty time constraints in mind.

Original Course Development: 1997

The team that developed the first two iMPH courses—*Quantitative Methods* and *Health Information Systems*--included four faculty eager to pursue online technology and a small distance education team (Instructional Designer, Web Developer, and Technical Writer). They began by investigating the various modes available for content delivery and interaction. The online courses developed had to meet the same quality standards as the on-site classes.

JHSPH was already involved in distance education by teleconference and had employed some video/audio. Because the first online public health students would be scattered throughout the US and not always able to access teleconference facilities, teleconference was not considered an option. In addition, teleconference instruction requires the instructor to be present and the goal was to reduce, not increase, the number of classes taught by faculty. The option of simply sending video lectures along with reading material also did not adequately fulfill instructor-learner interaction or the quality standards set by JHSPH. Therefore, the most plausible option appeared to be instruction delivered over the Internet.

Three Internet delivery models were examined for *content-learner interaction*: content on screen with hyperlinks, streamed video, and streamed audio/Microsoft® PowerPoint®. The traditional distance education mode of content interspersed with hyperlinks was considered too impersonal and very similar to mailing out simple printed lecture material. Streamed video required too much bandwidth. Finally, streamed audio with PowerPoint was selected as the content delivery mode because the learners could actually hear the instructor as the content was delivered. Instead of faculty devoting time to authoring text material for web delivery, they instead would convert their overheads or 35mm slide presentations to PowerPoint, record their lectures in an audio studio, and then have their PowerPoint streamed together with the audio. Although this mode requires the faculty member to spend more time in preparation, once complete, revision is not much greater than the preparation for an on-site course revision and the faculty can save time (or use time more productively) on-site by making use of their electronic content. JHSPH surveys, however, show that a successful online audio lecture must be specifically recorded with the distance student in mind. Those recorded in the classroom result in student complaints about receiving second-hand material. Therefore, the first two courses developed included the same on-site lectures recorded and personalized in a studio. The faculty developed their own PowerPoint slides and then these were formatted and synchronized with the recorded audio.

Content mastery for these first two courses also relied on numerous laboratory exercises, normally supervised by teaching assistants (TAs). To adequately match the on-site learner content interaction of these exercises, various plans were implemented. For instance, in *Quantitative Methods*, students read case studies presented online and then answered numerous interactive online questions

based on the study. The questions included interactive tables in which various data could be inserted for different variables. Once the student completed the exercise, their answers were submitted and graded electronically. They were able to access and check their answers one week later, after all students completed the exercise. Review questions with immediate electronic feedback were also included. Homework was submitted via email and graded by the TAs (just as it is in the on-site course). In *Health Information Systems*, students were provided with online laboratory problems for which they sent in their answers via email. TAs also graded these.

Because the content was developed before course delivery, faculty time dedicated to *content-learner interaction* during the course was very minimal, limited primarily to the supervision of TAs.

In these first two courses, *learner-instructor* interaction was modeled after the on-site class. TAs acted as the buffer for the first line of questions via email, graded homework, etc. The faculty for both courses, however, felt students should be able to ask questions directly of instructors just as if they were in the classroom. To accomplish this, the division Web Developer created a proprietary program that allowed one-way synchronous audio delivery by the faculty, rather like a radio broadcast, and two-way chat. At specified times throughout the course, faculty would hold discussion sessions, answer questions, or review for examinations. These sessions were quite successful despite frequent technical problems caused by network congestion. If a student could not attend or hear a session, however, they could listen to the archived audio and read the archived chat the next day. The sessions lasted 1-2 hours and required almost no preparation. During a sixteen-week period, the faculty spent approximately 8-16 hours on these sessions.

The TAs did find that online students expected almost immediate responses to their email questions. To make this more manageable, the TAs established online office hours and a guideline that all email would be answered within 24 hours.

An important concern was the ability to recreate a campus community at a distance—the *learner-learner interaction*. An environment that would replicate hallway dialogues and student study sessions was needed. Two software programs were incorporated to help with this goal. For synchronous communication between students, Microsoft™ NetMeeting™ was incorporated and for asynchronous communication, a commercial bulletin board system (BBS).

The learner-to-learner interaction was the least successful portion of the first two courses. NetMeeting continually crashed and students would become frustrated and use the telephone or email. The BBS was used primarily to arrange meeting times, ask questions, and post documents rather than detailed discussions. A real student community was not achieved. Since most of the learner-to-learner interaction relied on student efforts, faculty time was not an issue.

At the conclusion of these courses, students completed detailed course evaluations. Improvements to subsequent courses were based on these surveys and the experience of the development team (faculty and distance education division). In regards to the faculty/student interaction balance, outside of course content troubleshooting, faculty found that they spent approximately one-third more time interacting with students than with a normal on-site class. This was primarily due to the live chat sessions, which they regarded as very valuable.

Subsequent Course Development: 1998-1999

In the subsequent set of courses developed, *learner-content interaction* was very similar to the first two courses developed—lectures delivered by streamed audio/PowerPoint. A variety of laboratory exercises were included. Many of these required group participation, which was challenging over distance

and time zones. Once again the students attempted to use Microsoft NetMeeting and continued to have limited success. However, via email, BBS, and phone, they were able to successfully complete their group work. Faculty time was not a factor.

Learner-instructor interaction continued to be accomplished via live broadcast-chat sessions and email (primarily with TA). However, some faculty members also strived (with some skepticism) to create rich BBS interaction between the faculty and learners. They found that once they were able to initially engage the students in a discussion, the discussions grew in quality and depth. Faculty only needed to check the BBS forums routinely, spending approximately an hour a week. Some faculty required that another student first reply to all BBS messages before the faculty became engaged.

Due to the use of the group exercises and BBS discussions, a student community with solid *learner-learner interaction* became evident. In fact, students began to communicate with each other so well that personal discussions had to be curtailed at the beginning of every live chat session.

In some courses, faculty did attempt to personally handle all email communication. One faculty became so overwhelmed that he had to enlist TA support mid-term.

There were also some faculty who chose not to include the live-chat sessions and because of the heavy use of TAs had virtually no personal interaction with the students. The quality of faculty-student interaction received poor rating and many negative comments in the course evaluations.

The course evaluations for the subsequent courses that incorporated the recommended methods of faculty/student interaction continued to receive excellent ratings from students. The primary problems reported were related to network congestion. Faculty time spent *during* online course delivery was actually less than on-site course delivery.

Current Course Development: 2000

Over 20 full web courses have now been developed. Some courses are being offered for the fourth time. Most faculty, initially skeptical, are impressed by the quality of both the live-chat and BBS sessions and have elected to incorporate them into their courses or improve upon past communications. Most faculty set up a series of thoughtful, pertinent BBS discussion questions before the course starts and post them to the BBS as the course progresses. This takes minimal time. NetMeeting was replaced with iChat and is used for synchronous TA-learner communication and learner-learner communication. Although iChat does not have a white board, the communication is stable. To add more learner-instructor interaction without increasing the faculty's burden, primary faculty are inviting guest lecturers to hold special live-chat sessions. Web events directed to the entire iMPH student body also substitute for on-site seminars. Grand Round sessions are also available online.

Faculty are also achieving an improved faculty/student interaction balance by integrating these electronic tools into their on-site and satellite campus courses. For instance, instead of faculty and students traveling to the satellite class three times a week, they instead work online part of the week and meet on-site once week. During these face-to-face classes, they then can concentrate on applying what they learned via online. Faculty also find that they save time revising their on-site classes by using electronic media rather than overheads, 35mm slides etc.

More video is being incorporated online also. For instance, most professors film short 3-minute introductions to courses and lectures (keeping 56K modems in mind). This allows online students to see the faculty, as well as hear them. CD-ROMs are used for longer videos and heavy graphics.

Learner-content interaction is currently a major focus. The faculty and the distance education division are attempting to make content less lecture oriented and more interactive. Various strategies are being experimented with such as making content delivery less linear, including animations, short video segments, and interactive activities embedded right into the lecture material.

In Conclusion

Over the past four years of online course development, JHSPH has found that faculty can maintain quality interaction with learners without significantly increasing the normal on-site instructor-learner interaction time. In fact, often the dialogue is richer (particularly in large survey classes) and, by strategically integrating electronic media into their on-site classes also, they can actually reduce the amount of time spent in the routine work of delivering on-site classes. Recurrent questions can actually be tracked electronically and either used to improve content or posted in frequently asked question areas. Many on-site administrative issues can be handled electronically rather than in office hours. Office hours can be spent on more substantive issues, such as career planning.

Although developing an online course still requires a great deal of time by faculty and distance education staff, creative, strategic planning can result in online courses that achieve a successful and quality faculty/student interaction without undue burden on faculty time.

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Abstract

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